



Estimating pCO₂ from remote sensing in the Case-II waters of the Belgian Coastal Zone - First results from the BELCOLOUR-II project

A.V. Borges (1), K. Suykens (1), M.-V. Commarieux (1), L.-S. Schiettecatte (1), B. Delille (1), R. Astoreca (2), V. Rousseau (2), C. Lancelot (2), K. Ruddick (3)

(1) Unité d'Océanographie Chimique, Université de Liège, B-4000 Liège, B-4000, Belgium (alberto.borges@ulg.ac.be), (2) Ecologie des Systèmes Aquatiques, Université Libre de Bruxelles, B-1050, Belgium, (3) Belgium Management Unit of the North Sea Mathematical Models, Royal Belgian Institute for Natural Sciences, B-1200 Brussels, Belgium

In coastal waters, a purely data based approach will be probably insufficient to better constrain the air-sea CO₂ fluxes, to study their inter-annual variability and their long-term changes. One approach to achieve these goals is to use remote sensing fields of relevant biogeochemical independent variables to extrapolate available data, and produce maps of the partial pressure of CO₂ (pCO₂) and air-CO₂ fluxes. In the open ocean this approach has to some extent been successfully used based on fields of chlorophyll-a (Chl_a), sea surface temperature (SST) and sea surface salinity (SSS). This approach remains challenging in coastal waters that have complex optical properties (Case-II waters) and that exhibit highly dynamic pCO₂ temporal and spatial variations. During the first year of the Belgian funded BELCOLOUR-II project (Optical remote sensing of marine, coastal and inland waters; <http://www.mumm.ac.be/BELCOLOUR/EN/index.php>), three field cruises for optical measurements were carried in April, July and September 2007. Here, based on the preliminary BELCOLOUR-II data, we investigate the possibility of deriving algorithms to predict pCO₂ from remote sensed variables.